Agnes Globet

Vitamins and Health

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Vitamins and Health

THE health of each generation benefits by the knowledge and experience gained by the preceding one. Such improvement is reflected in the longer average span of life and in the decrease in many preventable diseases.

One of the greatest contributions of this century towards knowledge of health maintenance has been the discovery of the vitamins. While there is still much to be learnt about these substances, we now have enough certain knowledge to obtain their benefits in daily experience. Thus many conditions of ill-health and unfitness which have previously been regarded as inevitable are now known to be preventable for adults and, in addition, the children of to-day should grow up with a better build and healthier bodies than their parents if our knowledge of dietary requirements is rightly applied.

VITAMIN DEFICIENCY DISEASES

It is only during the last quarter of a century that the now well-known " vitamin deficiency diseases " such as beri-beri, scurvy, and rickets, have become recognised as such. Previous to that and, indeed, even as late as the early years of the last war, they were thought to be due to infections or obscure hereditary defects.

More information regarding vitamins and their effects on health is becoming available daily and, without entering into any technical discussion of the subject, it is true to say that in general there are at least a dozen known vitamins which are necessary for health and which a proper selection of food should supply. For want of knowledge of their constitution when their existence was first proved, they were designated A, B, C,—etc., and these convenient names have since become familiar all over the world.

Vitamins are substances occurring naturally in animal and vegetable produce, but differing from protein, carbohydrate and mineral constituents in being present in such small proportions that for many years they entirely escaped chemical detection. At the same time these traces of vitamins were shown to possess an extraordinary activity when present in the food of animals or man. Men almost dying of scurvy could be restored to health by means of the vitamin C in lemons. Beri-beri, a paralytic

disease causing deaths by the hundred in tropical countries in the East, could be prevented entirely by use of whole rice in place of polished rice. The polishings, which had previously been removed, contained the vitamin B. Children, whose limbs were bent and muscles flabby with rickets, could be cured by means of cod liver oil containing vitamin D.

THE PROTECTIVE POWER OF VITAMINS

Each vitamin thus became associated with the disease against which it offered protection.

Vitamin A became known as the " anti-infective " vitamin because it protected the body against certain infective conditions and especially against a disease of the eyes called xerophthalmia.

Vitamin B was called " anti-neuritic " because it gave protection against diseases of the neuritis type.

Vitamin C was called " anti-scorbutic " because it prevented scurvy, and vitamin D " anti-rachitic " because it cured rickets, and so on.

As time went on, it became clear that this apparently simple table did not tell the whole story. It was found that one vitamin would not suffice without the others. In fact, any diet, however good in other respects, could not be fully used by the body for health if any *one* of the vitamins were lacking.

Moreover, the vitamins not only protected against definite diseases but also played a big part in preventing much ill-health, associated with symptoms such as constipation, indigestion and loss of appetite, arising from their comparative shortage in ordinary food. This side of the question is of the greatest importance in this country and is referred to again later.

Of the four vitamins first discovered, A and D were found in fats and became known as the ' fat-soluble vitamins,' whereas B and C could be dissolved in water and were hence known as the ' water-soluble vitamins.' Vitamins A and D occur frequently together and are abundantly present in milk, butter, cream, eggs and especially fish oils, such as cod liver oil and halibut liver oil.

Traces of vitamin B are found in practically all foods, but there are few rich sources. The embryo or germ of seeds—especially cereals—and yeast are the

best known. Vitamin C occurs in most fruits and fresh vegetables.

THE "GOOD MIXED DIET"

The discovery that traces of vitamins were widely distributed in nature led to the view that the way to safeguard health from the deficiency diseases, and from general ill-health arising from an insufficient vitamin supply was to ensure a " good mixed diet," and there is no doubt that this has done much to make diseases which were once quite common comparatively rare. Nevertheless, they still occur, particularly in childhood when the bodily demands are great, and wherever diets are for any reason restricted. There is also the difficulty that even a diet which appears to be both " good " and " mixed " often falls short of the requirements both of childhood and of adult life, and it is a common practice to overcome this shortage by giving children daily additions of cod liver oil for vitamins A and D, orange juice for vitamin C, and Bemax for vitamin B.

With regard to adults, the danger in this country is not that they will succumb to one or other of the well-recognised deficiency diseases, for there is enough of each of the vitamins in the ordinary diet of the population to prevent this, but that they will not get sufficient vitamins to prevent the state of vague ill-health that is so widespread to-day.

GENERAL ILL-HEALTH

One need only look at men and women travelling, working, in the streets, and even in the country, to see how widespread is that general ' ill-health,' and it is probably true that a large proportion of this is the result of long continued shortage of vitamins in the daily food.

Dr. J. C. Drummond, Professor of Biochemistry at the University of London, in a recent lecture at the Royal Society of Arts, said :—

> " There is a firmly established view that the diets of Western Europe are sufficiently varied to include a sufficiency of vitamin B. *I think this is a very dangerous and inaccurate view to hold.* If one makes an analysis of a typical Western European urban diet one finds that in every vital respect it is vitamin deficient, *and probably in none more than in vitamin B.*"

WHAT YOUR DAILY FOOD SHOULD PROVIDE

This booklet is published in order to give some idea of what your daily food should provide. It is in no sense a substitute for medical treatment. Where symptoms of illness are present, medical advice should always be sought, but since well chosen food is an important factor in keeping fit, it is thought that the information that follows may be of use to many who seek to maintain health by correct feeding.

For normal health and development the body requires:

(1) Protein or Nitrogenous Food	e.g., meat, fish, cheese, eggs, peas and beans.
(2) Fat	e.g., butter, cream, lard, dripping, olive oil, etc.
(3) Starch and Sugar (Carbohydrates)	e.g., bread, potatoes, root vegetables, sugars, fruits.
(4) Mineral Salts	e.g., calcium, phosphorus, iron, etc., found in milk, green vegetables, fruit.

(5) Water

(6) Vitamins

Since this book is primarily concerned with the vitamins let us summarise our present knowledge of them and the part they play in the maintenance of health.

Vitamin A—is present in milk, eggs, cheese, green vegetables and carrots. Cod liver oil is a rich source and halibut liver oil a very rich source of the vitamin. A shortage of vitamin A in food causes damage to the mucous membranes of the eyes and mouth and thus leads to infection. An interesting condition due to lack of vitamin A is called ' night blindness.' Patients are unable to see at all in a dim light. It has actually been suggested that the Italians were defeated at Caporetto during the last war for this reason, because their rations were deficient in vitamin A.

Vitamin B—has been found to be composed of several different substances which, however, are often associated together in food.

Vitamin B_1—is fundamental to the working of the body. It is concerned with the chemical conversion by means of which carbohydrate the principal human ' fuel,' is made to supply energy. Shortage of vitamin B_1 shows itself first

by general ill-health and poor appetite and often by neuritis.

Vitamin B_2—is a mixture of several substances, three at least of which are of importance to health. These are called riboflavin, the anti-pellagra factor, and vitamin B_6 (the terms B_3, B_4 and B_5 having been already used for other substances). Riboflavin, like vitamin B_1, is also concerned in the utilization of carbohydrates, but it is only needed in such very small amounts and is present in so many foods that no human disease is known to result from its lack. The anti-pellagra factor, as its name implies, cures or prevents the serious disease pellagra, which is common in certain tropical countries. Vitamin B_6, which has only recently been investigated is certainly very important, because shortage of it causes a certain type of anæmia.

Vitamin C—is the vitamin found in oranges, lemons and tomatoes, in fact it is present in fruits and vegetables generally, including potatoes. Shortage of vitamin C shows itself quickly by bad health, sore gums and bad complexion. Serious deficiency causes scurvy. It has recently been found that many children in this country suffer from ' sub-scurvy.' All children therefore must have plenty of vitamin C in their food.

Vitamin D—is present in milk, butter and eggs and in large amounts in cod and halibut liver oils. It is the vitamin which protects children from rickets. Owing to the fact that the ultra-violet rays of the sun manufacture vitamin D in one's skin, it is sometimes called " the sunshine vitamin." Vitamin D can be made artificially by irradiating a substance called " ergosterol."

Vitamin E—is necessary for successful pregnancy in women and for health and fertility in both men and women. Children born of poorly-fed mothers need plenty of vitamin E for growth and the healthy development of the muscular and central nervous systems.
Vitamin E is contained in green vegetables and in whole-meal grains.

Other Vitamins have been discovered in addition to those already mentioned, but it is not known at the moment whether they are of direct importance in human nourishment. (For instance, vitamin K is needed to stop bleeding in chickens, vitamin F protects white rats against " scaley

tail " and vitamin P is concerned in some manner with the permeability of blood vessels).

The enormous importance of vitamins to human welfare will be recognised when it is known that they have been the subject of international conferences, at which standards of potency have been carefully defined and agreed. Samples of standard activity have been distributed to laboratories throughout the world to ensure that all measurements shall be strictly comparable. It is in terms of such International Units, as they are called, that all vitamin-containing foodstuffs are measured to-day.

From a practical point of view the easiest way to be sure that one's diet contains a full supply of all the vitamins necessary for good health is to eat:

(1) plenty of milk, butter and eggs for vitamins A and D;

(2) fruit, vegetables and salad for vitamins C and E;

(3) bacon, brown bread and, more especially Bemax every day to supply all the vitamins B.

In the next section of this book we will consider why it is that vitamin B is the factor which is the least likely to be present in adequate amounts in the food, and why, therefore Bemax claims a place in every well-planned diet.

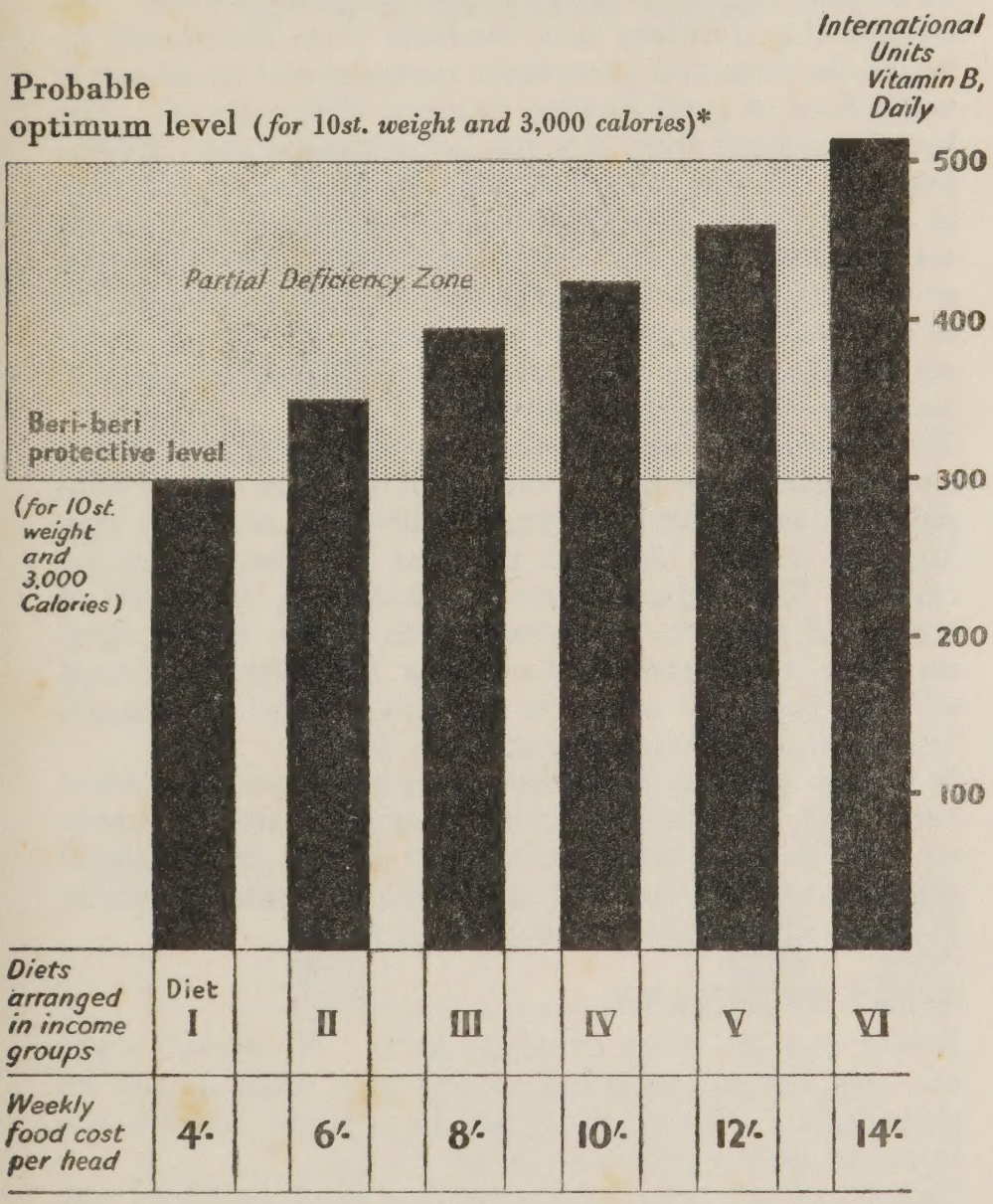
Bemax

BEMAX was first produced less than fifteen years ago and now is used extensively both in this country and abroad. The reason for this rapid development in manufacture is that it "supplies a definite need in diet."* The chart opposite (Daily B_1 Intake) shows the extent of this need. The figures in it are derived from the work of Sir John Orr who surveyed in detail the nourishment provided by the diet of every class of people. He found that *only* in the richest class was sufficient vitamin B_1 available. Brief consideration shows us how this condition has arisen. Up to the nineteenth century locally grown wheat was locally ground into flour by stone grinders and was made into bread in the household oven. Such bread contained the bulk of the nourishment of the whole wheat, and was eaten in quantities much greater than is customary to-day.

* "We consider Bemax an addition of definite value to the dietetic resources of the Profession."

The Practitioner—the well-known Medical Journal.

DAILY VITAMIN B_1 INTAKE (Great Britain) calculated from particulars in "Food, Health and Income" (Orr)



The figures above all apply to a food consumption of 3,000 Calories daily. When the food intake is greater the Vitamin B_1 requirement is increased.

*Calories are a measure of the total food intake.

REMOVAL OF BRAN AND GERM IN THE PREPARATION OF WHITE FLOUR

With the modern methods of wholesale production it was found necessary to store flour on a previously unheard-of scale. The whole-meal flour was found useless for storage; its keeping properties were bad and it quickly soured. To obviate this difficulty new methods were introduced by which the bran and germ were removed and an attractive white flour of good keeping qualities was produced. The bread produced from this was palatable and soon became popular. It was only years later that it was realised that in extracting the germ, the most valuable part of the grain was removed, and that the white bread, while still useful as an energy-producing food, was almost valueless as far as its vitamin content was concerned. The extent of this serious loss in our diet during the last hundred years is shown in the diagram opposite.

Time necessarily elapsed before it was possible to procure and present to the public the wheat germ in a form both palatable and vitamin-active, but after the necessary preliminary research this was achieved and Bemax was the result. When the amount of vitamin B_1 in Bemax is compared with that in other foods shown in the chart on page 11 it can be seen how important a dietary adjunct Bemax is and how difficult it is to replace the vitamin B_1 lost except by including Bemax.

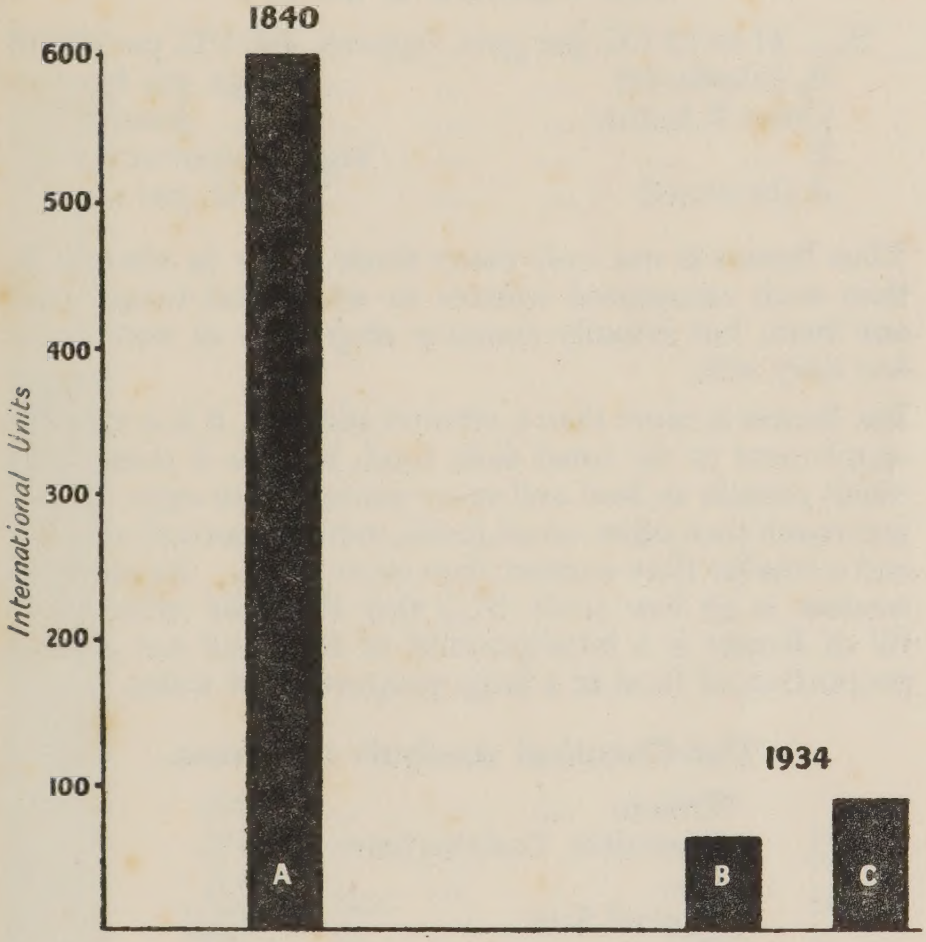
It is now possible therefore to restore, even to a white bread diet, the vitamin which is missing and to supply to a diet in which whole-meal bread is used, the additional vitamins required to make up for the decreased quantities of bread which it is now customary to eat.

WHAT IS BEMAX?

Bemax consists solely of wheat germ. No preservatives are used nor are additions of any kind made during its preparation. Bemax maintains its vitamin activity unimpaired over a period of years.

Samples of raw wheat germ are first of all examined and tested chemically and for their food value and vitamin B_1 content. These are found to vary widely, and only those samples which come up to the required standard are accepted for use in the manufacture of Bemax. They are then subjected to a scientifically-controlled process of preparation, to ensure the keeping qualities. The final

CHANGES IN VITAMIN B_1 INTAKE due to the reduction in the amount of bread eaten during the last hundred years



In 1840 an average of 21·3 ozs. of wholemeal bread containing 30 Units of vitamin B_1 per oz. was eaten daily, thus adding to the diet approx. 600 Units of Vitamin B_1 (Col. A).

In 1934 the daily consumption of bread was 11·6 ozs. Most people eat white bread containing 5 Units of Vitamin B_1 per oz. thus providing a total of only 60 Units (Col. B). If 10% of brown bread is eaten a day the amount of Vitamin B_1 supplied rises to 90 International Units (Col. C).

product consists of dry, golden flakes, each one of which is an embryo or germ of wheat. Since the germ of wheat occupies only about 1·5% of the whole grain, but contains by far the greater concentration of vitamins, Bemax, made from germ alone, is a highly active vitamin food. The actual vitamin activity is shown in the following table :—

The Vitamins of Bemax.

B_1 ...	11 to 15 I.U. per grm. (approx. 400 I.U. per oz.)
B_2 (riboflavin)	...50 mgs. per kg.
Other B factors	... present
E	high concentration
A (carotene)	280 I.U. per oz.

Thus Bemax is not only many times richer in vitamin B_1 than such recognised sources as wholemeal bread, malt and bran, but actually contains *sixty times as much as the best dairy milk.*

But Bemax is more than a vitamin addition, it is a valuable supplement to the usual daily food, because it contains as much protein as beef and more protein than eggs or fish, less starch than other cereal foods, valuable natural minerals and a smaller fibre content than most foods. Its moisture content is so low (only 5%) that the daily tablespoonful of Bemax is a tablespoonful of food and not a small proportion of food in a large proportion of water.

The Chemical Analysis of Bemax.

Protein	34·0%
Digestible Carbohydrate	46·5%
Fat	8·5%
Mineral Salts	4·5%
Water	5·0%
Cellulose (Fibre) ...	1·5%

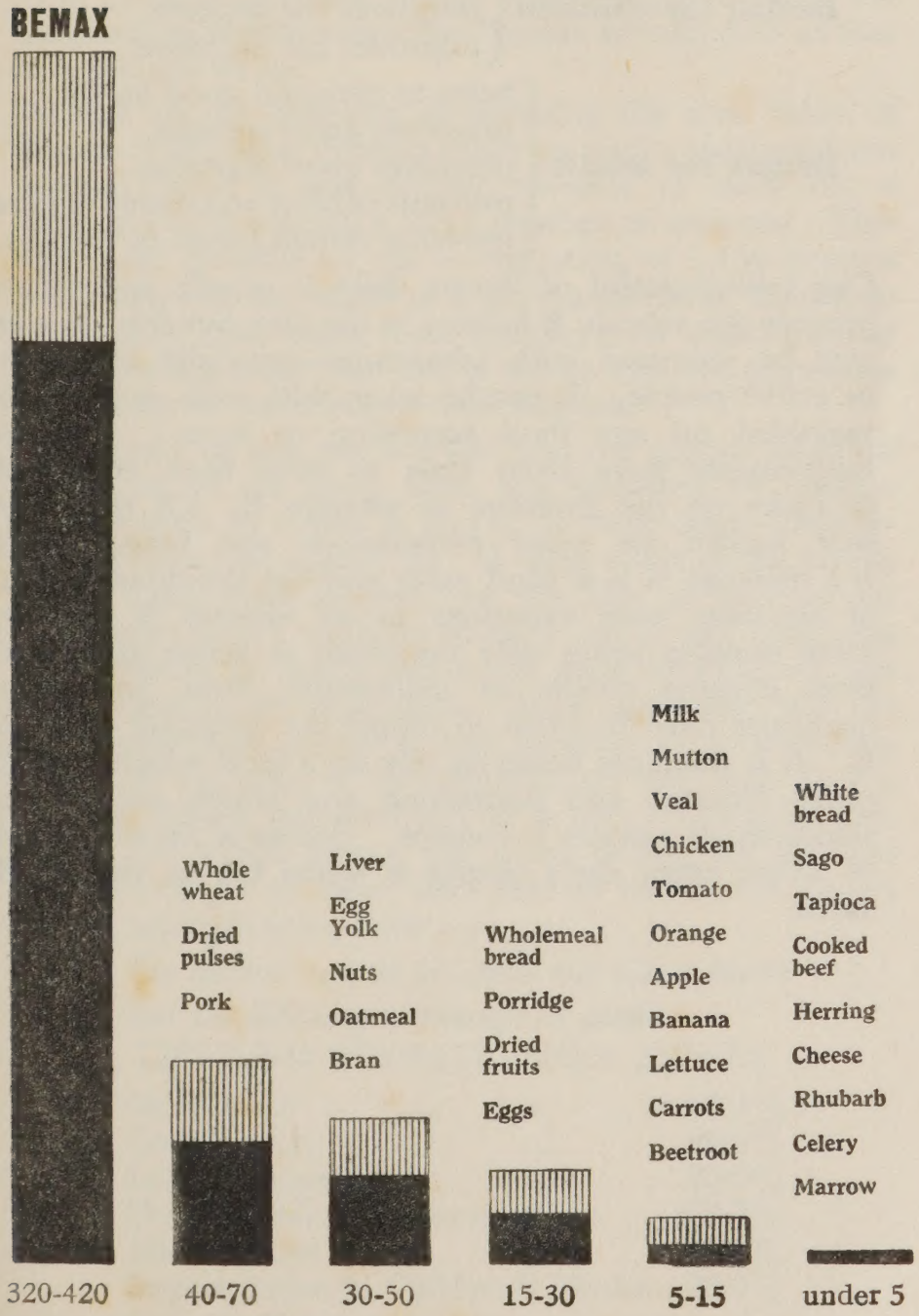
The Mineral Analysis of Bemax

Phosphorus	1·11%
Sodium and Potassium ...	0·64%
Magnesium	0·31%
Calcium	0·06%
Chlorine	0·02%
Iron	47 parts per
Copper	15 million

VITAMIN B_1 CONTENT OF COMMON FOODS

International Units per Oz.

Biochem J., 1935, *and other sources*



The addition of Bemax to the daily food is therefore an ideal way of making up deficiencies which are likely to be present. It is known that the result of a long-continued shortage of vitamin B may be conditions such as constipation, indigestion, debility, loss of appetite, under-development in children, etc., and that great improvement takes place when this shortage is made up.*

Bemax for children { assists growth. / improves the appetite. / improves the digestion.

Bemax for adults { helps to maintain good health. / promotes good appetite. / promotes good digestion. / prevents debility and undue fatigue / prevents certain forms of neuritis.

One tablespoonful of Bemax daily is usually enough to provide the vitamin B lacking in the diet, but this amount may be increased with advantage—especially by heavy or active people. It can be taken with milk or fruit, or sprinkled on any food according to taste. Various supplements have from time to time been employed to make up the shortage of vitamin B. Of these the best known are yeast preparations and bran. Yeast is a material of low food value and has the disadvantage of showing wide variations in its vitamin B activity, some samples being only one-tenth as active as others. Bran consists chiefly of indigestible fibre, and large quantities must be eaten to supply the necessary vitamin B. It is therefore better to rely on a food which is itself easily digested and nourishing and which also has a standardised vitamin B content. Bemax is the only food of which every day's output is tested for its vitamin B value.

* "Vitamin B is the greatest single deficiency in the diet to-day." *British Medical Journal.*

The Use of Bemax in the Maintenance of Health

IT frequently happens, despite prolonged biological research, that results in practice fall short of laboratory indications. In the case of Bemax, however, there are on record a vast and daily increasing number of reports from medical men and others which amply confirm the statement of regular users that "Bemax actually does *all* that it is claimed to do."

Because of the difficulty of assessing the true value of Bemax or any other product solely on results obtained from isolated cases, it was decided recently to carry out a comprehensive test on a large number of subjects. This was made possible by the co-operation of 1,124 doctors who observed the effects of a daily addition of Bemax to the food of 2,000 cases, some healthy, some under medical treatment and more than half of whom were the physicians themselves or members of their families.

The results of this test showed that the regular addition of Bemax to the daily food was followed by definite improvement in health in 90.1% of these cases—*improvement in* 9 *cases out of every* 10. A close study of the results in the 2,000 cases showed that the ages of those under test ranged from 1 to above 60 years, and it was found that improvement in health was noted soon after Bemax was first added to the daily food. Most noticeable was the improvement in digestion and decrease in constipation, whilst in the case of the children no less than 98.9% showed definite improvement in health. The chief conditions for which Bemax was given during the test and the percentages of those who derived benefit are shown on the accompanying table :—

The medical reports in 2,000 *test cases showed that the following percentages of people*

DERIVED BENEFIT FROM BEMAX

Indigestion	82·5%
Constipation	88·8%
Loss of Appetite	80·0%
Debility and Convalescence ...	87·3%
Malnutrition	78·4%
Improvement in Children's Health	98·9%

The Medical Officer in charge of a large children's convalescent home also conducted a series of tests to determine the effect of Bemax on debilitated children. The table below shows the increases in weight recorded during the test period when Bemax was added daily to the usual food.

(Tests on debilitated children)

Name	Record of Weights		
	Age Yrs.	Weight Gained lbs.	Period of time
Dorothy W. ...	10	10¾	6 weeks
Gladys E.	13	18	3 months
Edna O.	13	6	2 weeks
Winifred S.	13	18	7 weeks
Joan M.	10	9	6 weeks
Kenneth G.	7	8¾	6 weeks
Virla W.	14	24	4 months
Lily T.	13	13¾	6 weeks
Hilda A.	8	13½	7 months
Lydia L.	12	14½	7 months
Joan M.	12	14	10 months
Beryl, J.	13	15	10 months
Winnie, B.	12	11¾	4 months
Dorothy C.	12	16	4 months
Edna J.	11	7½	4 months
Phyllis T.	8	7½	6 weeks
Dorothy W. ...	8	6	6 weeks

The Medical Officer reported that the general improvement in health and stamina was in many cases remarkable, absence of the usual colds and other winter ailments being an especially notable result of the treatment.

What other Doctors say about Bemax

CONSTIPATION

(C.O.121)

" The use of Bemax was followed by better and more regular bowel action with great relief from the depression and headache attendant on that condition and a general sense of well-being."

M.D.

" There is no doubt that Bemax obviates the use of aperients . . . even obstinate cases of constipation have been cured after regular use of Bemax for one or two months."

M.B., B.S.

(C.O.10)

" After a fortnight I was able to give up taking pills which I had used for years."

M.R.C.S., L.R.C.P.

(C.O.13)

" A child aged 6 with chronic constipation, for which she had been drugged for weeks, was given Bemax. A dessertspoonful twice a day produced a healthy, active child."

M.D.

INDIGESTION

(D.G.3)

" I can say that the patient looked a different being when she had finished the tin, and has now ceased medical treatment. I have been giving her medicines for years. In my opinion you have a very efficient remedy."

M.R.C.S., L.R.C.P.

(D.G.1)

" I had been suffering from dyspepsia for some years and have been quite free since taking Bemax."

C.B., C.M.G.

(D.G.22)

" In less than a week acidity and flatulence with a tendency to constipation were relieved."

M.D.

RHEUMATISM

(3854-1)

" I have for many years been a martyr to constipation, headaches and rheumatism. After taking the first tin of Bemax all my symptoms disappeared and I feel quite another man. As to the results on my patients, I have prescribed it to about fifty, and in every case there has been great improvement. In some the effect has been to make new beings of them."

M.D., M.R.C.S.

(3144-1)

A Harley Street Doctor writes :—

" From my own personal experience I know that the effect of Bemax on cases of *early* rheumatoid arthritis is little short of marvellous. After three months all pain and swelling of the joints has disappeared, and there is a general feeling of well-being and vitality which I can only ascribe to the fact that Bemax supplies the vitamin evidently lacking in the ordinary diet."

M.B., Ch.B.

(3137-1)

" After taking Bemax for a week the pain got less ; I felt much stronger and not so depressed. The swelling went down, the fluid being absorbed. After three weeks or a month my feet were normal, I felt much stronger, the backache was gone and since then I have been quite fit and well."

M.D.

SLEEPLESSNESS

(M(s)13)

" I, personally, have gained weight and slept better, and think Bemax has definite tonic effects as well as obvious nutrient qualities. In more than one skin case I have noted improvement after its administration."

F.R.C.S.

GENERAL HEALTH

"There is no doubt, in my opinion, that the regular addition of Bemax to the diet (even of apparently healthy individuals) leads to a sense of increased fitness and better general health. I have proved this by personal experience as well as observation on and statements from others."

M.B., Ch.B., D.P.H.

CHILDREN

(5.C)

"Bemax given to children aged 1½ and 4 years resulted in absence of usual winter colds, etc. They were sturdy and strong despite lack of sunshine. Teething seemingly accelerated."

M.D., D.P.H.

(3.C)

"Within a few weeks of taking Bemax the boy (aged 4 years 9 months) had a better colour and improved spirits. He put on weight and is apparently healthy in every way."

L.R.C.P.I., D.P.H.

(20.C)

"After a week or two the children seemed to have more physical energy and their appetites improved."

M.B.

"I have pleasure in telling you that a number of children from 5 to 10 years have been literally transformed from pale and sallow looking, becoming pictures of health. I have been so satisfied with the results obtained that I have already prescribed Bemax to several patients."

M.B., C.M.

How to take Bemax

BEMAX has so rich a concentration of vitamins that a small quantity is sufficient to supply all we require. Most people find that a heaped tablespoonful a day is ample to enable them to derive benefit; whilst for children, quantities of from one to two dessertspoonfuls a day should be given, according to age.

The best time to take Bemax is in the morning at breakfast. For an adult, place a heaped tablespoonful of Bemax in a cup or soup plate and add a teaspoonful or so of sugar according to taste. Add a cupful of milk (hot or cold) and mix thoroughly. This makes a most pleasant breakfast food. In the case of children smaller quantities of Bemax are required; these amounts are given in the leaflet found within each carton of Bemax. For invalids or very young babies where difficulty is experienced in

taking solid food the daily requirement of vitamin B can be ensured by taking it in the form of a watery extract of Bemax.

This extract is prepared by adding to the "dose" of Bemax as much warm water as desired, allowing to stand for 20 minutes to half-an-hour, and draining off the clear fluid. This fluid contains practically all the vitamin B in the Bemax and may be used for making barley water or adding to lemonade, orange squash or other fruit juices to make a really pleasant and refreshing drink.

In some cases a heaped tablespoonful twice a day may be required. These are cases where the intestinal muscles have become so weakened by lack of vitamin B that one tablespoonful of Bemax daily is not sufficient. After a period the muscles may recover and one tablespoonful daily will suffice.

EXPECTANT and NURSING MOTHERS need from three to five times the average requirement of vitamin B. In such cases three to five tablespoonfuls of Bemax should be taken daily.

Bemax is very palatable and some people enjoy it sprinkled on their breakfast cereal. Many take Bemax in soup, beef-tea or with stewed fruit. Others to promote sound sleep, take Bemax in milk last thing at night. The main thing is to take it daily, for vitamin B cannot be stored within the system. It must be replenished day by day.

Too much Bemax does no harm. It has a slight laxative action, and the correct quantity to take can soon be ascertained by the effect upon the bowels. The benefit of Bemax is usually observed in about ten days after its use has begun. Bemax is obtainable from all chemists, large stores and "health food" stores in 1/6, 2/6, and 4/6 cartons.

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